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<110> NORRIS, STEVEN J.

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<141> 2005-06-17

<150> PCT/US2003/04118

<151> 2003-12-22

<150> 60/435,077

<151> 2002-12-20

<160> 81

<170> PatentIn Ver. 2.1

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Pro Thr Asn Lys Phe Tyr Gln Ser Val Ile Gln Leu Gly Asn Gly Phe

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tta aca tct ata gct aat tta ggg aaa gga ttt tta gat gtt ttt gtg	144
Leu Thr Ser Ile Ala Asn Leu Gly Lys Gly Phe Leu Asp Val Phe Val	
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Met	Ala	Lys	Asn	Gly	Thr	Phe	Ser	Ile	Lys	Asn	Asn	Glu	Asp	Ala	Ala	

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Thr Ile Asn Glu Ala Leu Ala Thr Val Lys Gln Glu Asp Lys Ser Val			
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Thr Ile Asn Glu Ala Leu Ala Thr Val Lys Gln Glu Asp Lys Ser Val		320
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 gtgaa atg gaa aaa ata gaa aaa ttt aaa aac aaa tgt caa cat aaa cta 8270
 Met Glu Lys Ile Glu Lys Phe Lys Asn Lys Cys Gln His Lys Leu
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 caa cat aaa cta atc gta tta gta tca aca ctt tgc tat ata aac aat 8318
 Gln His Lys Leu Ile Val Leu Val Ser Thr Leu Cys Tyr Ile Asn Asn
 20 25 30
 aaa aat aaa aaa tat tca caa agc aac atc ctt tat tat ttt aat gaa 8366
 Lys Asn Lys Lys Tyr Ser Gln Ser Asn Ile Leu Tyr Tyr Phe Asn Glu
 35 40 45
 aat tta aaa aga aat ggg caa acc cct att aaa ata aaa aca tta caa 8414
 Asn Leu Lys Arg Asn Gly Gln Thr Pro Ile Lys Ile Lys Thr Leu Gln
 50 55 60
 aac tat ctt tat aaa ctg gaa aaa gaa ttt gaa gta aca act aat tat 8462
 Asn Tyr Leu Tyr Lys Leu Glu Lys Glu Phe Glu Val Thr Thr Asn Tyr
 65 70 75
 tat aaa cac ttg ggg gtt aat tgt gga acc gaa att tac tat aaa ctt 8510
 Tyr Lys His Leu Gly Val Asn Cys Gly Thr Glu Ile Tyr Tyr Lys Leu
 80 85 90 95
 aaa tat caa aaa caa aaa tgc tat cat aaa ata aac caa tat ttt aaa 8558
 Lys Tyr Gln Lys Gln Lys Cys Tyr His Lys Ile Asn Gln Tyr Phe Lys
 100 105 110
 aag aaa aaa gaa att aaa ttt aac tta aga gta agt gca ttt ttt aat 8606
 Lys Lys Lys Glu Ile Lys Phe Asn Leu Arg Val Ser Ala Phe Phe Asn
 115 120 125
 aaa aaa cac tca aaa aaa ggg agt gta gaa tta aag gaa tgt aat aat 8654
 Lys Lys His Ser Lys Lys Gly Ser Val Glu Leu Lys Glu Cys Asn Asn
 130 135 140
 aat aat aat aat aaa gag aaa gaa aca tcc caa aaa att gaa att tta 8702

Asn Asn Asn Asn Lys Glu Lys Glu Thr Ser Gln Lys Ile Glu Ile Leu
 145 150 155

caa aca aaa gtc tat gcc aaa aaa tgt aaa ttt ttg aca aac tac tat 8750
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act aaa att tta 8762
 Thr Lys Ile Leu

<210> 6
 <211> 179
 <212> PRT
 <213> Borrelia afzelii

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Asn Lys Lys Tyr Ser Gln Ser Asn Ile Leu Tyr Tyr Phe Asn Glu Asn
 35 40 45

Leu Lys Arg Asn Gly Gln Thr Pro Ile Lys Ile Lys Thr Leu Gln Asn
 50 55 60

Tyr Leu Tyr Lys Leu Glu Lys Glu Phe Glu Val Thr Thr Asn Tyr Tyr
 65 70 75 80

Lys His Leu Gly Val Asn Cys Gly Thr Glu Ile Tyr Tyr Lys Leu Lys
 85 90 95

Tyr Gln Lys Gln Lys Cys Tyr His Lys Ile Asn Gln Tyr Phe Lys Lys
 100 105 110

Lys Lys Glu Ile Lys Phe Asn Leu Arg Val Ser Ala Phe Phe Asn Lys
 115 120 125

Lys His Ser Lys Lys Gly Ser Val Glu Leu Lys Glu Cys Asn Asn Asn
 130 135 140

Asn Asn Asn Lys Glu Lys Glu Thr Ser Gln Lys Ile Glu Ile Leu Gln
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Thr Lys Val Tyr Ala Lys Lys Cys Lys Phe Leu Thr Asn Tyr Tyr Thr
 165 170 175

Lys Ile Leu

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<212> DNA

<213> *Borrelia afzelii*

<220>

<221> CDS

<222> (1)..(414)

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1				5				10						15		

gct	ttt	ggc	aag	gat	ggt	gat	gcg	ctg	aca	ggt	gtt	gca	aaa	gct	gct	96
Ala	Phe	Gly	Lys	Asp	Gly	Asp	Ala	Leu	Thr	Gly	Val	Ala	Lys	Ala	Ala	
		20					25					30				

gag	aat	gat	gct	aac	aag	gat	gcg	ggg	aag	ttg	ttt	gct	ggt	aag	aat	144
Glu	Asn	Asp	Ala	Asn	Lys	Asp	Ala	Gly	Lys	Leu	Phe	Ala	Gly	Lys	Asn	
		35					40					45				

ggt	aat	gct	ggt	gct	gct	gac	att	gcg	aag	gcg	gct	gct	gct	gct	ggt	act	192
Gly	Asn	Ala	Gly	Ala	Ala	Asp	Ile	Ala	Lys	Ala	Ala	Ala	Ala	Ala	Val	Thr	
	50					55				60							

gcg	gtt	agt	ggg	gag	cag	ata	cta	aaa	gct	att	gtt	gag	gcg	gct	ggt	240
Ala	Val	Ser	Gly	Glu	Gln	Ile	Leu	Lys	Ala	Ile	Val	Glu	Ala	Ala	Gly	
	65				70				75						80	

gat	gcg	gat	cag	gcg	ggt	gta	aag	gct	gat	gcg	gct	aag	aat	ccg	att	288
Asp	Ala	Asp	Gln	Ala	Gly	Val	Lys	Ala	Asp	Ala	Ala	Lys	Asn	Pro	Ile	
			85					90						95		

gca	gct	gcg	att	ggg	act	gct	gat	gat	ggt	gct	gcg	ttt	ggt	aag	gat	336
Ala	Ala	Ala	Ile	Gly	Thr	Ala	Asp	Asp	Gly	Ala	Ala	Phe	Gly	Lys	Asp	
			100					105					110			

gag	atg	aag	aag	aga	aat	gat	aag	att	gtt	gca	gct	att	gtt	ttg	agg	384
Glu	Met	Lys	Lys	Arg	Asn	Asp	Lys	Ile	Val	Ala	Ala	Ile	Val	Leu	Arg	
		115					120					125				

ggg	gtg	cct	aag	gat	gga	aag	ttt	gct	gct	aa						416
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<211> 138

<212> PRT

<213> *Borrelia afzelii*

<400> 8

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				1			5			10			15			
gct	ttt	ggc	aag	gag	ggt	agt	gcg	ctg	aag	gat	gtt	gca	aaa	gtt	gct	96
Ala	Phe	Gly	Lys	Glu	Gly	Ser	Ala	Leu	Lys	Asp	Val	Ala	Lys	Val	Ala	
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gat	gat	gat	aac	aag	gat	gcg	ggg	aag	ttg	ttt	gct	ggt	aag	aat	ggt	144
Asp	Asp	Asp	Asn	Lys	Asp	Ala	Gly	Lys	Leu	Phe	Ala	Gly	Lys	Asn	Gly	
				35			40			45						
ggt	gct	ggt	gct	gct	gat	gcg	att	ggg	aag	gcg	gct	gct	gct	gtt	act	192
Gly	Ala	Gly	Ala	Ala	Asp	Ala	Ile	Gly	Lys	Ala	Ala	Ala	Ala	Val	Thr	
				50			55			60						
gcg	gtt	agt	ggg	gag	cag	ata	ctg	aaa	gct	att	gtt	gat	gct	gct	ggt	240
Ala	Val	Ser	Gly	Glu	Gln	Ile	Leu	Lys	Ala	Ile	Val	Asp	Ala	Ala	Gly	
				65			70			75			80			
gct	gca	gct	aat	cag	gcg	ggt	aaa	aag	gct	gcg	gat	gct	aag	aat	ccg	288
Ala	Ala	Ala	Asn	Gln	Ala	Gly	Lys	Lys	Ala	Ala	Asp	Ala	Lys	Asn	Pro	
				85			90			95						

att gcg gct gcg att ggg act gct gat gat ggg gcg gag ttt aag gat 336
 Ile Ala Ala Ala Ile Gly Thr Ala Asp Asp Gly Ala Glu Phe Lys Asp
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gat atg aag aag agt gat aat att gct gcg gct att gtt ttg agg ggg 384
 Asp Met Lys Lys Ser Asp Asn Ile Ala Ala Ala Ile Val Leu Arg Gly
 115 120 125

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 Val Pro Lys Asp Gly Lys Phe Ala Ala
 130 135

<210> 10
 <211> 137
 <212> PRT
 <213> Borrelia afzelii

<400> 10
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 Asp Asp Asp Asn Lys Asp Ala Gly Lys Leu Phe Ala Gly Lys Asn Gly
 35 40 45
 Gly Ala Gly Ala Ala Asp Ala Ile Gly Lys Ala Ala Ala Ala Val Thr
 50 55 60
 Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile Val Asp Ala Ala Gly
 65 70 75 80
 Ala Ala Ala Asn Gln Ala Gly Lys Lys Ala Ala Asp Ala Lys Asn Pro
 85 90 95
 Ile Ala Ala Ala Ile Gly Thr Ala Asp Asp Gly Ala Glu Phe Lys Asp
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 Val Pro Lys Asp Gly Lys Phe Ala Ala
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 <213> Borrelia afzelii

<220>
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gct ttt ggt aag gag ggt gat gcg ctg aag gat gtt gca aaa gtt gct 96
Ala Phe Gly Lys Glu Gly Asp Ala Leu Lys Asp Val Ala Lys Val Ala
20 25 30

gat gag aat ggg gat aac aag gat gcg ggg aag ttg ttt gct ggt gag 144
Asp Glu Asn Gly Asp Asn Lys Asp Ala Gly Lys Leu Phe Ala Gly Glu
35 40 45

aat ggt aat gct ggt ggt gct gct gat gct gac att gcg aag gcg gct 192
Asn Gly Asn Ala Gly Gly Ala Ala Asp Ala Asp Ile Ala Lys Ala Ala
50 55 60

gct gct gtt act gcg gtt agt ggg gag cag ata ctg aaa gct att gtt 240
Ala Ala Val Thr Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile Val
65 70 75 80

gag gcg gct ggt gct gcg gat cag gcg ggt gta aag gct gag gag gct 288
Glu Ala Ala Gly Ala Ala Asp Gln Ala Gly Val Lys Ala Glu Glu Ala
85 90 95

aag aat ccg att gca gct gcg att ggg act gat gat gct ggt gcg gcg 336
Lys Asn Pro Ile Ala Ala Ala Ile Gly Thr Asp Asp Ala Gly Ala Ala
100 105 110

gag ttt ggt gag aat gat atg aag aag aat gat aat att gct gcg gct 384
Glu Phe Gly Glu Asn Asp Met Lys Lys Asn Asp Asn Ile Ala Ala Ala
115 120 125

att gtt ttg agg ggg gtg cct aag gat gga aag ttt gct gct aa 428
Ile Val Leu Arg Gly Val Pro Lys Asp Gly Lys Phe Ala Ala
130 135 140

<210> 12

<211> 142

<212> PRT

<213> *Borrelia afzelii*

<400> 12

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20 25 30

Asp Glu Asn Gly Asp Asn Lys Asp Ala Gly Lys Leu Phe Ala Gly Glu
35 40 45

Asn Gly Asn Ala Gly Gly Ala Ala Asp Ala Asp Ile Ala Lys Ala Ala
50 55 60

Ala Ala Val Thr Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile Val

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Glu Ala Ala Gly	Ala Ala Asp Gln Ala Gly	Val Lys Ala Glu Glu Ala				
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Lys Asn Pro Ile	Ala Ala Ala Ile Gly Thr Asp Asp Ala Gly Ala Ala					
	100	105		110		
Glu Phe Gly Glu	Asn Asp Met Lys Lys Asn Asp Asn Ile Ala Ala Ala					
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gct ttt ggc aag gag ggt agt gcg ctg aag gat gtt aaa aca gtt gct	95
Ala Phe Gly Lys Glu Gly Ser Ala Leu Lys Asp Val Lys Thr Val Ala	
20 25 30	
gct gag aat gag gct aac aag gat gcg ggg aag ttg ttt gct ggt aag	143
Ala Glu Asn Glu Ala Asn Lys Asp Ala Gly Lys Leu Phe Ala Gly Lys	
35 40 45	
aat ggt aat gct gat gct gct gat gct gct gac att gcg aag gcg gct	191
Asn Gly Asn Ala Asp Ala Ala Asp Ala Ala Asp Ile Ala Lys Ala Ala	
50 55 60	
ggt gct gtt agt gcg gtt agt ggg gag cag ata ctg aaa gct att gtt	239
Gly Ala Val Ser Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile Val	
65 70 75	
gat ggt gct ggt gat gca gct aat cag gcg ggt aaa aag gct gct gag	287
Asp Gly Ala Gly Asp Ala Ala Asn Gln Ala Gly Lys Lys Ala Ala Glu	
80 85 90 95	
gct aag aat ccg att gcg gct gcg att ggg act aat gaa gct ggg gcg	335
Ala Lys Asn Pro Ile Ala Ala Ala Ile Gly Thr Asn Glu Ala Gly Ala	
100 105 110	
gag ttt ggt gat gat atg aag aag aga aat gat aag att gct gcg gct	383
Glu Phe Gly Asp Asp Met Lys Lys Arg Asn Asp Lys Ile Ala Ala Ala	
115 120 125	

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 130 135 140

<210> 14
 <211> 141
 <212> PRT
 <213> *Borrelia afzelii*

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 20 25 30
 Glu Asn Glu Ala Asn Lys Asp Ala Gly Lys Leu Phe Ala Gly Lys Asn
 35 40 45
 Gly Asn Ala Asp Ala Ala Asp Ala Ala Asp Ile Ala Lys Ala Ala Gly
 50 55 60
 Ala Val Ser Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile Val Asp
 65 70 75 80
 Gly Ala Gly Asp Ala Ala Asn Gln Ala Gly Lys Lys Ala Ala Glu Ala
 85 90 95
 Lys Asn Pro Ile Ala Ala Ala Ile Gly Thr Asn Glu Ala Gly Ala Glu
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 115 120 125
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 130 135 140

<210> 15
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 <212> DNA
 <213> *Borrelia garinii*

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 taattattta atactattca gcagtaaatt ctataagtca ttaattattt aatactattc 180
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<210> 16

<211> 396

<212> DNA

<213> *Borrelia garinii*

<220>

<221> CDS

<222> (2) .. (394)

<400> 16

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  Gly Ile Lys Gly Ile Val Asp Ala Ala Glu Lys Ala Asp Ala Lys Glu
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ggg aag ttg aat gct gct ggt gct gag ggt acg act aac gcg gat gct 97
  Gly Lys Leu Asn Ala Ala Gly Ala Glu Gly Thr Thr Asn Ala Asp Ala
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ggg aag ttg ttt gtg aag aat gct ggt aat gtg ggt ggt gaa gca ggt 145
  Gly Lys Leu Phe Val Lys Asn Ala Gly Asn Val Gly Gly Glu Ala Gly
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gat gct ggg aag gct gct gct gcg gtt gct gct gtt agt ggg gag cag 193

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[illegible]

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  20             25             30
Gly Lys Leu Phe Val Lys Asn Ala Gly Asn Val Gly Gly Glu Ala Gly
  35             40             45
Asp Ala Gly Lys Ala Ala Ala Ala Val Ala Ala Val Ser Gly Glu Gln
  50             55             60
Ile Leu Lys Ala Ile Val Asp Ala Ala Lys Asp Gly Gly Glu Lys Gln
  65             70             75             80
Gly Lys Lys Ala Ala Asp Ala Thr Asn Pro Ile Glu Ala Ala Ile Gly
  85             90             95
Gly Ala Gly Asp Asn Asp Ala Ala Ala Ala Phe Ala Thr Met Lys Lys
  100            105            110
Asp Asp Gln Ile Ala Ala Ala Met Val Leu Arg Gly Met Ala Lys Asp
  115            120            125
Gly Gln Phe
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<210> 18
 <211> 390
 <212> DNA
 <213> *Borrelia garinii*

<220>
 <221> CDS
 <222> (2)..(388)

<400> 18
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ggg aag ttg gat gtg gct ggt gat gct ggt gaa act aac aag gat gct 97
 Gly Lys Leu Asp Val Ala Gly Asp Ala Gly Glu Thr Asn Lys Asp Ala
 20 25 30

ggg aag ttg ttt gtg aag aag aat aat gag ggt ggt gaa gca aat gat 145
 Gly Lys Leu Phe Val Lys Lys Asn Asn Glu Gly Gly Glu Ala Asn Asp
 35 40 45

gct ggg aag gct gct gct gcg gtt gct gct gtt agt ggg gag cag ata 193
 Ala Gly Lys Ala Ala Ala Val Ala Ala Val Ser Gly Glu Gln Ile
 50 55 60

tta aaa gcg att gtt gat gct gct gag ggt ggt gag aag cag ggt aag 241
 Leu Lys Ala Ile Val Asp Ala Ala Glu Gly Gly Glu Lys Gln Gly Lys
 65 70 75 80

aag gct gcg gat gct aca aat ccg att gag gcg gct att ggg ggt gcg 289
 Lys Ala Ala Asp Ala Thr Asn Pro Ile Glu Ala Ala Ile Gly Gly Ala
 85 90 95

ggt gat aat gat gct gct gcg gcg ttt gct act atg aag aag gat gat 337
 Gly Asp Asn Asp Ala Ala Ala Ala Phe Ala Thr Met Lys Lys Asp Asp
 100 105 110

cag att gct act gct atg gtt ctg agg gga atg gct aag gat ggg cag 385
 Gln Ile Ala Thr Ala Met Val Leu Arg Gly Met Ala Lys Asp Gly Gln
 115 120 125

ttt gc 390
 Phe

<210> 19
 <211> 129
 <212> PRT
 <213> *Borrelia garinii*

<400> 19
 Gly Ile Lys Gly Ile Val Asp Ala Ala Glu Lys Ala Asp Ala Lys Glu
 1 5 10 15

Gly Lys Leu Asp Val Ala Gly Asp Ala Gly Glu Thr Asn Lys Asp Ala
 20 25 30
 Gly Lys Leu Phe Val Lys Lys Asn Asn Glu Gly Gly Glu Ala Asn Asp
 35 40 45
 Ala Gly Lys Ala Ala Ala Ala Val Ala Ala Val Ser Gly Glu Gln Ile
 50 55 60
 Leu Lys Ala Ile Val Asp Ala Ala Glu Gly Gly Glu Lys Gln Gly Lys
 65 70 75 80
 Lys Ala Ala Asp Ala Thr Asn Pro Ile Glu Ala Ala Ile Gly Gly Ala
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 Gly Asp Asn Asp Ala Ala Ala Ala Phe Ala Thr Met Lys Lys Asp Asp
 100 105 110
 Gln Ile Ala Thr Ala Met Val Leu Arg Gly Met Ala Lys Asp Gly Gln
 115 120 125

Phe

<210> 20
 <211> 390
 <212> DNA
 <213> *Borrelia garinii*

<220>
 <221> CDS
 <222> (2) .. (388)

<400> 20
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 Gly Ile Lys Gly Ile Val Asp Ala Ala Glu Lys Ala Asp Ala Lys Glu
 1 5 10 15

 ggg agg ttg gat gtg gct ggt gat gct ggt gaa act aac aag gat gct 97
 Gly Arg Leu Asp Val Ala Gly Asp Ala Gly Glu Thr Asn Lys Asp Ala
 20 25 30

 ggg aag ttg ttt gtg aag aag aat aat gag ggt ggt gaa gca aat gat 145
 Gly Lys Leu Phe Val Lys Lys Asn Asn Glu Gly Gly Glu Ala Asn Asp
 35 40 45

 gct ggg aag gct gct gct gcg gtt gct gct gtt agt ggg gag cag ata 193
 Ala Gly Lys Ala Ala Ala Ala Val Ala Ala Val Ser Gly Glu Gln Ile
 50 55 60

 tta aaa gcg att gtt gat gct gct gag ggt ggt gag aag cag ggt aag 241
 Leu Lys Ala Ile Val Asp Ala Ala Glu Gly Gly Glu Lys Gln Gly Lys
 65 70 75 80

 aag gct gcg gat gct aca aat ccg att gag gcg gct att ggg ggt gcg 289

Lys	Ala	Ala	Asp	Ala	Thr	Asn	Pro	Ile	Glu	Ala	Ala	Ile	Gly	Gly	Ala	
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ggt	gat	aat	gat	gct	gct	gcg	gcg	ttt	gct	act	atg	aag	aag	gat	gat	337
Gly	Asp	Asn	Asp	Ala	Ala	Ala	Ala	Phe	Ala	Thr	Met	Lys	Lys	Asp	Asp	
				100				105					110			
cag	att	gct	gct	gct	atg	gtt	ctg	agg	gga	atg	gct	aag	gat	ggg	cag	385
Gln	Ile	Ala	Ala	Ala	Met	Val	Leu	Arg	Gly	Met	Ala	Lys	Asp	Gly	Gln	
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ttt	gc															390
Phe																

<210> 21
 <211> 129
 <212> PRT
 <213> *Borrelia garinii*

Gly	Ile	Lys	Gly	Ile	Val	Asp	Ala	Ala	Glu	Lys	Ala	Asp	Ala	Lys	Glu	
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			20					25					30			
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	50					55					60					
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65					70					75					80	
Lys	Ala	Ala	Asp	Ala	Thr	Asn	Pro	Ile	Glu	Ala	Ala	Ile	Gly	Gly	Ala	
				85					90					95		
Gly	Asp	Asn	Asp	Ala	Ala	Ala	Ala	Phe	Ala	Thr	Met	Lys	Lys	Asp	Asp	
			100					105					110			
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Phe																

<210> 22
 <211> 339
 <212> DNA
 <213> *Borrelia garinii*

<220>
 <221> CDS

<222> (2)..(337)

<400> 22

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  Gly Ile Lys Gly Ile Val Asp Ala Ala Gly Glu Thr Asn Lys Asp Ala
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ggg aag ttg ttt gtg aag aag aat aat gag ggt ggt gaa gca aat gat 97
  Gly Lys Leu Phe Val Lys Lys Asn Asn Glu Gly Gly Glu Ala Asn Asp
            20             25             30

gct ggg aag gct gct gct gcg gtt gct gct gtt agt ggg gag cag ata 145
  Ala Gly Lys Ala Ala Ala Ala Val Ala Ala Val Ser Gly Glu Gln Ile
            35             40             45

tta aaa gcg att gtt gat gct gct gag ggt ggt gag aag cag ggt aag 193
  Leu Lys Ala Ile Val Asp Ala Ala Glu Gly Gly Glu Lys Gln Gly Lys
            50             55             60

aag gct gcg gat gct aca aat ccg att gag gcg gct att ggg ggt aca 241
  Lys Ala Ala Asp Ala Thr Asn Pro Ile Glu Ala Ala Ile Gly Gly Thr
            65             70             75             80

aat gat aat gat gct gcg gcg ttt gct act atg aag aag gat gat cag 289
  Asn Asp Asn Asp Ala Ala Ala Phe Ala Thr Met Lys Lys Asp Asp Gln
            85             90             95

att gct gct gct atg gtt ctg agg gga atg gct aag gat ggg cag ttt 337
  Ile Ala Ala Ala Met Val Leu Arg Gly Met Ala Lys Asp Gly Gln Phe
            100            105            110

gc 339
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<210> 23

<211> 112

<212> PRT

<213> *Borrelia garinii*

<400> 23

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Gly Ile Lys Gly Ile Val Asp Ala Ala Gly Glu Thr Asn Lys Asp Ala
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Gly Lys Leu Phe Val Lys Lys Asn Asn Glu Gly Gly Glu Ala Asn Asp
  20             25             30

Ala Gly Lys Ala Ala Ala Ala Val Ala Ala Val Ser Gly Glu Gln Ile
  35             40             45

Leu Lys Ala Ile Val Asp Ala Ala Glu Gly Gly Glu Lys Gln Gly Lys
  50             55             60

Lys Ala Ala Asp Ala Thr Asn Pro Ile Glu Ala Ala Ile Gly Gly Thr
  65             70             75             80

Asn Asp Asn Asp Ala Ala Ala Phe Ala Thr Met Lys Lys Asp Asp Gln
  85             90             95
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 <213> Artificial Sequence

<220>
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 Primer

<400> 24
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<210> 25
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 25
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<210> 26
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 26
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<210> 27
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 Primer

<400> 27
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<210> 28
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 28
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<210> 29
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 29
aaggggattg cgaaggggat aaagg 25

<210> 30
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 30
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<210> 31
<211> 5897
<212> DNA
<213> Borrelia garinii

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<211> 100

<212> PRT

<213> *Borrelia garinii*

<400> 32

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Leu Val Ala Asp Ala Leu Gly Phe Lys Ala Asp Pro Lys Lys Ser Asp
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Val Lys Thr Tyr Phe Glu Ser Leu Ala Lys Lys Leu Glu Glu Thr Lys
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Asp Gly Leu Thr Lys Leu Ser Lys Gly Asn Asp Gly Asp Thr Gly Lys
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<213> *Borrelia garinii*

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35 40 45
Ser Val Asn Gly Ile Ala Lys Gly Ile Lys Gly Ile Val Asp Ala Ala
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Glu Lys Ala Asp Ala Lys Glu Gly Lys Leu Asp Val Ala Gly Asp Ala
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<212> PRT
<213> *Borrelia garinii*

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 50 55 60
 Asp Ala Ala Glu Lys Ala Asp Ala Lys Glu Gly Lys Leu Asp Val Ala
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 Gly Asp Ala Gly Glu Gly Asn Lys Asp Ala Gly Lys Leu Phe Val Lys
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 Ala Thr Asn Pro Ile Glu Ala Ala Ile Gly Gly Ala Asp Ala Gly Ala
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 Asn Ala Glu Ala Phe Asn Lys Met Lys Lys Asp Asp Gln Ile Ala Ala
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 Asp Asp Ala Ala Ala His
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<210> 36
 <211> 191
 <212> PRT
 <213> *Borrelia garinii*

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 35 40 45
 Gly Ile Ala Lys Gly Ile Lys Gly Ile Val Asp Ala Ala Glu Lys Ala
 50 55 60
 Asp Ala Lys Glu Gly Lys Leu Asp Val Ala Gly Ala Ala Gly Thr Thr
 65 70 75 80

Asn Val Asn Val Gly Lys Leu Phe Val Lys Asn Asn Gly Asn Glu Gly
 85 90 95
 Gly Asp Ala Ser Asp Ala Gly Lys Ala Ala Ala Ala Val Ala Ala Val
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 Ser Gly Glu Gln Ile Leu Lys Ala Ile Val Asp Ala Ala Lys Asp Gly
 115 120 125
 Asp Lys Gln Gly Val Thr Asp Val Lys Asp Ala Thr Asn Pro Ile Glu
 130 135 140
 Ala Ala Ile Gly Gly Thr Asn Asp Asn Asp Ala Ala Ala Phe Ala Thr
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 Met Lys Lys Asp Asp Gln Ile Ala Ala Ala Met Val Leu Arg Gly Met
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 <213> *Borrelia garinii*

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 Ser Asn Gly Gly Ala Ala Ala Lys Gly Gly Asp Ala Ala Ser Val Asn
 35 40 45

Gly Ile Ala Lys Gly Ile Lys Gly Ile Val Asp Ala Ala Glu Lys Ala
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<213> *Borrelia garinii*

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Lys Glu Gly Lys Leu Asn Ala Ala Gly Ala Glu Gly Thr Thr Asn Ala
50 55 60
Asp Ala Gly Lys Leu Phe Val Lys Asn Ala Gly Asn Val Gly Gly Glu
65 70 75 80
Ala Gly Asp Ala Gly Lys Ala Ala Ala Ala Val Ala Ala Val Ser Gly
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Glu Gln Ile Leu Lys Ala Ile Val Asp Ala Ala Lys Asp Gly Gly Glu
100 105 110
Lys Gln Gly Lys Lys Ala Ala Asp Ala Thr Asn Pro Ile Asp Ala Ala
115 120 125
Ile Gly Gly Thr Asn Asp Asn Asp Ala Ala Ala Ala Phe Ala Thr Met
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Lys Asp Gly Gln Phe Ala Leu Lys Asp Ala Ala Ala Ala His
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<213> *Borrelia garinii*

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 65 70 75 80
 Glu Thr Asn Lys Asp Ala Gly Lys Leu Phe Val Lys Asn Asn Gly Asn
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 Ala Ser Val Asn Gly Ile Ala Lys Gly Ile Lys Gly Ile Val Asp Ala
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 Ala Gly Glu Thr Asn Lys Asp Ala Gly Lys Leu Phe Val Lys Lys Asn
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 Ala Ala Phe Asn Asn Met Lys Lys Asp Asp Gln Ile Ala Ala Ala Met
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<210> 43
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 <213> *Borrelia garinii*

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 <213> *Borrelia garinii*

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Lys Gly Ile Lys Gly Ile Val Asp Ala Ala Gly Lys Ala Asp Ala Lys
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<210> 45
 <211> 71
 <212> PRT
 <213> *Borrelia garinii*

<400> 45
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<213> Borrelia afzelii

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 Phe Ala Gly Asn Ala Gly Asn Ala Ala Ala Asp Ile Ala Lys Ala
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 Ala Gly Ala Val Thr Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile
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 Ala Lys Asn Pro Ile Ala Ala Ala Ile Gly Ala Asp Ala Ala Gly Ala
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 Asp Phe Gly Asp Asp Met Lys Lys Ser Asp Lys Ile Ala Ala Ala Ile
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 Lys Ala Phe Gly Lys Asp Gly Asn Ala Leu Lys Asp Val Ala Lys Val
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Ala Ala Gly Lys Ala Phe Gly Lys Asp Gly Asn Ala Leu Lys Asp Val
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Gly Ala Val Thr Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile Val
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Lys Asn Pro Ile Ala Ala Ala Ile Gly Ala Asp Ala Ala Gly Ala Gly
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Ala Asp Phe Gly Asn Asp Met Lys Lys Arg Asn Asp Lys Ile Val Ala
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<213> *Borrelia afzelii*

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130		135		140											
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Val Lys Ser Ala Val
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<213> *Borrelia afzelii*

<400> 55

Glu Ser Ala Val Gly Glu Val Ser Ala Trp Leu Glu Glu Met Ile Thr
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Ala Ala Ser Glu Ala Ala Thr Lys Gly Gly Thr Gly Gly Thr Gly Gly
20 25 30

Asp Ser Glu Lys Ile Gly Asp Ser Asp Ala Asn Asn Gly Ala Val Ala
35 40 45

Asp Ala Ser Ser Val Lys Glu Ile Ala Lys Gly Ile Lys Gly Ile Val
50 55 60

Asp Ala Ala Gly Lys Ala Phe Gly Lys Asp Gly Asn Ala Leu Lys Asp
65 70 75 80

Val Ala Glu Val Ala Asp Asp Glu Ala Asn Ala Asp Ala Gly Lys Leu
85 90 95

Phe Ala Gly Asn Ala Gly Asn Ala Ala Ala Asp Val Ala Lys Ala
100 105 110

Ala Gly Ala Val Thr Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile
115 120 125

Val Asp Ala Ala Gly Ala Ala Asp Gln Ala Gly Ala Lys Ala Asp Ala
130 135 140

Ala Lys Asn Pro Ile Ala Ala Ala Ile Gly Thr Asn Glu Ala Gly Ala
145 150 155 160

Ala Phe Lys Asp Gly Met Lys Lys Arg Asn Asp Asn Ile Ala Ala Ala
165 170 175

Ile Val Leu Arg Gly Val Ala Lys Ser Gly Lys Phe Ala Val Ala Ala
180 185 190

Ala Asp Ala Gly Lys Ala Arg

195

<210> 56
<211> 207
<212> PRT
<213> *Borrelia afzelii*

<400> 56
Glu Ser Ala Val Asp Glu Val Ser Lys Trp Leu Glu Glu Met Ile Thr
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Ala Ala Ser Glu Ala Ala Lys Val Gly Ala Gly Gly Asp Asp Lys Ile
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Gly Asp Ser Ala Asn Asn Gly Ala Val Ala Asp Ala Gly Ser Val Lys
35 40 45
Gly Ile Ala Lys Gly Ile Lys Gly Ile Val Asp Ala Ala Gly Lys Ala
50 55 60
Phe Gly Lys Glu Gly Asp Ala Leu Lys Asp Val Ala Lys Val Ala Asp
65 70 75 80
Glu Asn Gly Asp Asn Lys Asp Ala Gly Lys Leu Phe Ala Gly Glu Asn
85 90 95
Gly Asn Ala Gly Gly Ala Ala Asp Ala Asp Ile Ala Lys Ala Ala Ala
100 105 110
Ala Val Thr Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile Val Glu
115 120 125
Ala Ala Gly Ala Gly Asp Ala Ala Asn Gln Ala Gly Lys Lys Ala Asp
130 135 140
Glu Ala Lys Asn Pro Ile Ala Ala Ala Ile Gly Thr Asp Asp Ala Gly
145 150 155 160
Ala Ala Phe Gly Gln Asp Asp Met Lys Lys Arg Asn Asp Asn Ile Ala
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Ala Ala Ile Val Leu Arg Gly Val Ala Lys Gly Gly Lys Phe Ala Val
180 185 190
Ala Asn Ala Ala Asn Asp Ser Lys Ala Ser Val Lys Ser Ala Val
195 200 205

<210> 57
<211> 153
<212> PRT
<213> *Borrelia afzelii*

<400> 57
Glu Ser Ala Val Asp Glu Val Ser Lys Trp Leu Glu Glu Ile Ile Thr
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Ala Thr Gly Lys Ala Phe Gly Lys Asp Gly Asn Ala Leu Ala Gly Val
20 25 30

Ala Lys Val Ala Asp Asp Glu Ala Asn Ala Asp Ala Gly Lys Leu Phe
35 40 45

Ala Gly Glu Asn Gly Asn Ala Gly Ala Ala Ala Ile Gly Lys Ala Ala
50 55 60

Ala Ala Val Thr Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile Val
65 70 75 80

Asp Ala Ala Gly Gly Ala Ala Gln Val Gly Ala Gly Ala Gly Ala Ala
85 90 95

Thr Asn Pro Ile Ala Ala Ala Ile Gly Ala Ala Gly Asp Gly Ala Asp
100 105 110

Phe Gly Lys Asp Glu Met Lys Lys Arg Asn Asp Lys Ile Ala Ala Ala
115 120 125

Ile Val Leu Arg Gly Val Ala Lys Asp Gly Lys Phe Ala Ala Ala Ala
130 135 140

Asn Asp Ser Lys Ala Ser Val Lys Ser
145 150

<210> 58
<211> 202
<212> PRT
<213> *Borrelia afzelii*

<400> 58
Glu Ser Ala Val Asp Glu Val Ser Lys Trp Leu Glu Glu Met Ile Thr
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20 25 30

Asp Lys Ile Gly Asp Val Gly Ala Ala Asn Lys Gly Ala Lys Ala Asp
35 40 45

Ala Ser Ser Val Lys Glu Ile Ala Lys Gly Ile Lys Gly Ile Val Asp
50 55 60

Ala Ala Gly Lys Ala Phe Gly Gly Asp Ala Leu Lys Asp Val Lys Ala
65 70 75 80

Ala Gly Asp Asp Asn Lys Glu Ala Gly Lys Leu Phe Ala Gly Ala Asn
85 90 95

Gly Asn Ala Gly Ala Asn Ala Ala Ala Asp Asp Ile Ala Lys Ala
100 105 110

Ala Gly Ala Val Ser Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile

115	120	125
Val Glu Ala Ala Gly Ala Ala Asp Gln Ala Gly Val Lys Ala Glu Glu		
130	135	140
Ala Lys Asn Pro Ile Ala Ala Ala Ile Gly Thr Asp Asp Ala Gly Ala		
145	150	155 160
Ala Glu Phe Gly Glu Asn Asp Met Lys Lys Asn Asp Asn Ile Ala Ala		
	165	170 175
Ala Ile Val Leu Arg Gly Val Ala Lys Ser Gly Lys Phe Ala Ala Asn		
	180	185 190
Ala Asn Asp Ala Gly Lys Lys Glu Ser Val		
195	200	

<210> 59
 <211> 201
 <212> PRT
 <213> Borrelia afzelii

<400> 59

Lys Ser Ala Val Asp Glu Ala Ser Lys Trp Leu Glu Glu Met Ile Thr		
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Asp Ser Val Lys Gly Ile Ala Lys Gly Ile Lys Gly Ile Val Asp Ala		
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Ala Gly Lys Ala Phe Gly Lys Asp Gly Ala Leu Lys Asp Val Ala Ala		
	65	70 75 80
Ala Ala Gly Asp Glu Ala Asn Lys Asp Ala Gly Lys Leu Phe Ala Gly		
	85	90 95
Gln Asp Gly Gly Gly Ala Asp Gly Asp Ile Ala Lys Ala Ala Ala Ala		
	100	105 110
Val Thr Ala Val Ser Gly Glu Gln Ile Leu Lys Ala Ile Val Glu Ala		
	115	120 125
Ala Gly Asp Lys Ala Asn Gln Val Gly Val Lys Ala Ala Gly Ala Ala		
	130	135 140
Thr Asn Pro Ile Ala Ala Ala Ile Gly Thr Asp Asp Asp Asn Ala Ala		
	145	150 155 160
Ala Phe Asp Lys Asp Glu Met Lys Lys Ser Asn Asp Lys Ile Ala Ala		
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Ala Ile Val Leu Arg Gly Val Ala Lys Asp Gly Lys Phe Ala Ala Asn
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Ala Asn Asp Asn Ser Lys Ala Ser Val
195 200

<210> 60

<211> 82

<212> PRT

<213> Borrelia afzelii

<400> 60

Lys Ser Ala Val Asp Glu Val Ser Lys Trp Leu Glu Glu Met Ile Thr
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Ala Ala Ser Asp Ala Ala Thr Lys Gly Gly Thr Gly Glu Ala Ser Glu
20 25 30

Lys Ile Gly Asp Ser Asp Ala Asn Lys Gly Ala Gly Ala Gly Ala Ala
35 40 45

Phe Gly Glu Asn Asp Met Lys Lys Arg Asn Asp Asn Ile Ala Ala Ala
50 55 60

Ile Val Leu Arg Gly Val Ala Lys Asp Gly Lys Phe Ala Val Lys Glu
65 70 75 80

Asp Tyr

<210> 61

<211> 179

<212> PRT

<213> Borrelia afzelii

<400> 61

Met Glu Lys Ile Glu Lys Phe Lys Asn Lys Cys Gln His Lys Leu Gln
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His Lys Leu Ile Val Leu Val Ser Thr Leu Cys Tyr Ile Asn Asn Lys
20 25 30

Asn Lys Lys Tyr Ser Gln Ser Asn Ile Leu Tyr Tyr Phe Asn Glu Asn
35 40 45

Leu Lys Arg Asn Gly Gln Thr Pro Ile Lys Ile Lys Thr Leu Gln Asn
50 55 60

Tyr Leu Tyr Lys Leu Glu Lys Glu Phe Glu Val Thr Thr Asn Tyr Tyr
65 70 75 80

Lys His Leu Gly Val Asn Cys Gly Thr Glu Ile Tyr Tyr Lys Leu Lys
85 90 95

Tyr Gln Lys Gln Lys Cys Tyr His Lys Ile Asn Gln Tyr Phe Lys Lys

100

105

110

Lys Lys Glu Ile Lys Phe Asn Leu Arg Val Ser Ala Phe Phe Asn Lys
 115 120 125

Lys His Ser Lys Lys Gly Ser Val Glu Leu Lys Glu Cys Asn Asn Asn
 130 135 140

Asn Asn Asn Lys Glu Lys Glu Thr Ser Gln Lys Ile Glu Ile Leu Gln
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Thr Lys Val Tyr Ala Lys Lys Cys Lys Phe Leu Thr Asn Tyr Tyr Thr
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Lys Ile Leu

<210> 62

<211> 2775

<212> DNA

<213> *Borrelia garinii*

<400> 62

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<210> 63

<211> 2075

<212> DNA

<213> *Borrelia garinii*

<400> 63

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aacttggttc	gaaagaccgt	gcaagctggg	ttgaagaagg	ttggggatgt	tgtaagaat	540
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<210> 64
 <211> 2775
 <212> DNA
 <213> *Borrelia garinii*

<400> 64
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<210> 65
<211> 2075
<212> DNA
<213> *Borrelia garinii*

<400> 65
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<210> 66
<211> 184
<212> PRT
<213> *Borrelia garinii*

<400> 66
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20 25 30
Ser Asn Gly Gly Ala Ala Ala Lys Gly Gly Asp Ala Ala Ser Val Asn
35 40 45

Gly Ile Ala Lys Gly Ile Lys Gly Ile Val Asp Ala Ala Glu Lys Ala
 50 55 60
 Asp Ala Lys Glu Gly Lys Leu Asp Val Ala Gly Ala Ala Gly Glu Thr
 65 70 75 80
 Asn Lys Asp Ala Gly Lys Leu Phe Val Lys Lys Asn Gly Asp Asp Gly
 85 90 95
 Gly Asp Ala Gly Asp Ala Gly Lys Ala Ala Ala Val Ala Ala Val
 100 105 110
 Ser Gly Glu Gln Ile Leu Lys Ala Ile Val Asp Ala Ala Lys Asp Gly
 115 120 125
 Asp Lys Thr Gly Val Thr Asp Val Lys Asp Ala Thr Asn Pro Ile Asp
 130 135 140
 Ala Ala Ile Gly Gly Ser Ala Asp Ala Asn Ala Glu Ala Phe Asp Lys
 145 150 155 160
 Met Lys Lys Asp Asp Gln Ile Ala Ala Ala Met Val Leu Arg Gly Met
 165 170 175
 Ala Lys Asp Gly Gln Phe Ala Leu
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<210> 67
 <211> 140
 <212> PRT
 <213> *Borrelia garinii*

<400> 67
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 Lys Leu Asp Val Ala Gly Asp Ala Gly Glu Thr Asn Lys Asp Ala Gly
 20 25 30
 Lys Leu Phe Val Lys Asn Asn Gly Asn Glu Gly Gly Asp Ala Asp Asp
 35 40 45
 Ala Gly Lys Ala Ala Ala Ala Val Ala Ala Val Ser Gly Glu Gln Ile
 50 55 60
 Leu Lys Ala Ile Val Asp Ala Ala Lys Gly Gly Asp Lys Thr Gly Lys
 65 70 75 80
 Asn Asn Val Lys Asp Ala Glu Asn Pro Ile Glu Ala Ala Ile Gly Ser
 85 90 95
 Ser Ala Asp Ala Asp Ala Ala Ala Phe Asn Lys Glu Gly Met Lys Lys
 100 105 110
 Asp Asp Gln Ile Ala Ala Ala Met Val Leu Arg Gly Met Ala Lys Asp

115

120

125

Gly Gln Phe Ala Leu Thr Asn Asp Ala Ala Ala His
 130 135 140

<210> 68

<211> 942

<212> DNA

<213> *Borrelia garinii*

<400> 68

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gcaattgggg atgttgttaa tggtaatgat ggagcagcaa aagggtggtga tgcggcgagt 180
gttaattggga ttgctaaggg gataaagggg attgttgatg ctgctgagaa ggctgatgctg 240
aaggaaggga agttgaatgt ggctggtgct gctggtgctg agggtaacga ggctgctggg 300
aagctgtttg tgaagaagaa tgctggtgat catggtggtg aagcaggtga tgctgggagg 360
gctgctgctg cggttgctgc tgttagtggg gagcagatat taaaagcgat tgttgatgct 420
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<210> 69

<211> 217

<212> PRT

<213> *Borrelia garinii*

<400> 69

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Lys Asn Ala Val Asp Met Thr Lys Ala Ala Ala Val Ala Ala Ser Ala
  20 25 30
Ala Ser Ala Ala Thr Gly Asn Ala Ala Ile Gly Asp Val Val Asn Gly
  35 40 45
Asn Asp Gly Ala Ala Lys Gly Gly Asp Ala Ala Ser Val Asn Gly Ile
  50 55 60
Ala Lys Gly Ile Lys Gly Ile Val Asp Ala Ala Glu Lys Ala Asp Ala
  65 70 75 80
Lys Glu Gly Lys Leu Asn Val Ala Gly Ala Ala Gly Ala Glu Gly Asn
  85 90 95
Glu Ala Ala Gly Lys Leu Phe Val Lys Lys Asn Ala Gly Asp His Gly
  100 105 110

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Gly Glu Ala Gly Asp Ala Gly Arg Ala Ala Ala Ala Val Ala Ala Val
 115 120 125
 Ser Gly Glu Gln Ile Leu Lys Ala Ile Val Asp Ala Ala Lys Asp Gly
 130 135 140
 Gly Asp Lys Gln Gly Lys Lys Ala Glu Asp Ala Glu Asn Pro Ile Asp
 145 150 155 160
 Ala Ala Ile Gly Ser Thr Gly Ala Asp Asp Asn Ala Ala Glu Ala Phe
 165 170 175
 Ala Thr Met Lys Lys Asp Asp Gln Ile Ala Ala Ala Met Val Leu Arg
 180 185 190
 Gly Met Ala Lys Asp Gly Gln Phe Ala Leu Lys Asp Ala Ala His Asp
 195 200 205
 Asn His Leu Gln Pro Ser Leu Ile Ser
 210 215

<210> 70
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 <213> *Borrelia afzelii*

<400> 70
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 gaagctagcg aaaagattgg ggatgttggt gataataatc atggtgctgt agctgatgag 180
 gacagtgtta aggggattgc gaaggggata aaggggattg ttgatgctgc tgggaaggct 240
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 tga 663

<210> 71
 <211> 220
 <212> PRT
 <213> *Borrelia afzelii*

<400> 71
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 Asp Glu Ala Ser Lys Trp Leu Glu Glu Met Ile Thr Ala Ala Gly Glu
 20 25 30
 Ala Ala Thr Lys Gly Gly Thr Gly Glu Ala Ser Glu Lys Ile Gly Asp
 35 40 45

Val Gly Asp Asn Asn His Gly Ala Val Ala Asp Ala Asp Ser Val Lys
 50 55 60
 Gly Ile Ala Lys Gly Ile Lys Gly Ile Val Asp Ala Ala Gly Lys Ala
 65 70 75 80
 Phe Gly Lys Asp Gly Ala Leu Lys Asp Val Ala Ala Ala Ala Gly Asp
 85 90 95
 Glu Ala Asn Lys Asp Ala Gly Lys Leu Phe Ala Gly Gln Asp Gly Gly
 100 105 110
 Gly Ala Asp Gly Asp Ile Ala Lys Ala Ala Ala Ala Val Thr Ala Val
 115 120 125
 Ser Gly Glu Gln Ile Leu Lys Ala Ile Val Glu Ala Ala Gly Asp Lys
 130 135 140
 Ala Asn Gln Val Gly Val Lys Ala Ala Gly Ala Ala Thr Asn Pro Ile
 145 150 155 160
 Ala Ala Ala Ile Gly Thr Asp Asp Asp Asn Ala Ala Ala Phe Asp Lys
 165 170 175
 Asp Glu Met Lys Lys Ser Asn Asp Lys Ile Ala Ala Ala Ile Val Leu
 180 185 190
 Arg Gly Val Ala Lys Asp Gly Lys Phe Ala Ala Asn Ala Asn Asp Asn
 195 200 205
 Ser Lys Ala Ser Val Leu Gln Pro Ser Leu Ile Ser
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<210> 72

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 72

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26

<210> 73

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
Primer

<400> 73

cgggatccga gaggctggt gatgaggt 29

<210> 74
<211> 35
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 74
cgggatccaa gaggctgtg gatgaggcta gcaag 35

<210> 75
<211> 35
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Primer

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<210> 76
<211> 26
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 76
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<210> 77
<211> 30
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 77
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<210> 78
<211> 33

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 78
cgggatccaa ggggactgtt aagaatgctg ttg 33

<210> 79
<211> 34
<212> DNA
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<223> Description of Artificial Sequence: Synthetic
Primer

<400> 79
ttctgcagat gattatcatg agcagcatcc ttca 34

<210> 80
<211> 17
<212> DNA
<213> *Borrelia burgdorferi*

<400> 80
tgagggggct attaagg 17

<210> 81
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 81
ccggaattcc gg 12